

REMARKS

In the June 24, 2009 Office Action, the claims 1-6 were rejected in view of prior art. Claim 5 was also rejected as being indefinite for failing particularly point out and distinctly claim the subject matter that Applicants regard as the invention. No other objections or rejections were made in the Office Action.

Status of Claims and Amendments

In response to the June 24, 2009 Office Action, Applicants have amended claim 1 as indicated above. Applicants also have added new claims 7-12 by the current Amendment. Thus, claims 1-12 are now pending, with claims 1 and 7 being the only independent claims. Reexamination and reconsideration of the pending claims are respectfully requested in view of above amendments and the following comments.

Claim Rejections - 35 U.S.C. §112

In paragraph 2 of the Office Action, claim 5 was rejected under 35 U.S.C. §112, second paragraph. In response, Applicants respectfully traverse this rejection. Specifically, the Office Action indicates that it is unclear how a change in length of the shape varying member of the valve fixing part, i.e., a part of the valve retainer, may affect the length of the reed valve. In other words, the Office Action appears to regard “a fixed length of the reed valve” in claim 5 as “the length of the reed valve” itself. However, Applicants believe this understanding is incorrect. More specifically, the “fixed length of the reed valve” is not the physical length of the reed valve itself, but rather it is a length of a part of the reed valve that is held (fixed) by the valve fixing part of the valve retainer. In other words, the length of a part of the reed valve (e.g., a contact length) that contacts the valve fixing part of the valve retainer changes when the shape varying member expands or contracts (i.e., “fixed length” means “a length that is fixed” in the claim). Thus, Applicants believe that the claim does comply with 35 U.S.C. §112, second paragraph. Accordingly, withdrawal of this rejection is respectfully requested.

Rejections - 35 U.S.C. § 102

In paragraphs 5-10 of the Office Action, claims 1-5 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Application Publication No. 2002/0157717 (Hong). In response, Applicants have amended independent claim 1 to more clearly define the present invention over the prior art of record.

In particular, independent claim 1 now requires, *inter alia*, ***at least part of the valve retainer being composed of a shape varying member that varies in shape in response to a voltage application so as to change an opening/closing state of the reed valve.*** Support for this Amendment can be found in at least paragraphs [0045] and [0064] of the instant application. Clearly, this structure is *not* disclosed or suggested by the Hong publication or any other prior art of record.

Specifically, the Hong publication discloses a reed valve 120 and a valve retainer (stopper) 130 used in a reciprocal compressor. The spring 145 is disposed at the back part of the valve retainer 130, which is located at a position opposite the reed valve. The spring 145 adjusts the warp amount of the valve retainer 130. The spring 145 can be manually mechanically adjusted using the screw 143 in order to retain the valve retainer 130 in different positions (See Figures 3-5 of the Hong publication) when the valve is completely opened, so that the valve retainer 130 varies in shape. In other words, the valve retainer of the Hong publication corresponds to the shape varying member of independent claim 1, and the spring 145 corresponds to the "external input force" of previously presented independent claim 1.

However, the claims now require ***a shape varying member that varies in shape in response to a voltage application.*** Clearly, the mechanical spring 145 of the Hong publication is not such a member. It is well settled under U.S. patent law that for a reference to anticipate a claim, the reference must disclose each and every element of the claim within the reference. Therefore, Applicants respectfully submit that independent claim 1, as now amended, is not anticipated by the Hong publication. Accordingly, withdrawal of this rejection of independent claim 1 is respectfully requested.

Moreover, Applicants believe that dependent claims 2-5 are also allowable over the prior art of record in that they depend from independent claim 1, and therefore are allowable for the reasons stated above. Also, dependent claims 2-5 are further allowable because they include additional limitations, which in combination with the limitations of independent claim 1, are not disclosed or suggested by the Hong publication. Accordingly, withdrawal of this rejection of dependent claims 2-5 is also respectfully requested.

Rejections - 35 U.S.C. § 103

In paragraphs 12 and 13 of the Office Action, claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over the Hong publication in view of U.S. Patent No. 4,432,311(Holtzberg). In response, Applicants have amended independent claim 1 to more clearly define the present invention over the prior art of record, as mentioned above.

In particular, independent claim 1 now requires, *inter alia*, ***at least part of the valve retainer being composed of a shape varying member that varies in shape in response to a voltage application so as to change an opening/closing state of the reed valve.*** Clearly, this structure is *not* disclosed or suggested by the Hong publication and/or the Holtzberg patent, singularly or in combination.

First, the Holtzberg patent fails to account for the deficiencies of the Hong publication with respect to independent claim 1. Specifically, the Holtzberg patent fails to disclose or suggest ***a shape varying member that varies in shape in response to a voltage application*** whatsoever. Thus, even if the Hong publication and the Holtzberg patent were combined as suggested in the Office Action, the hypothetical device created by this hypothetical combination would not include all of the limitations of independent claim 1, as now amended.

Second, the Holtzberg patent merely teaches a composite valve spring retainer 54 of a valve 58 in an engine, not a polymer actuator as required by claim 6. In other words, the phrase “polymer actuator” has a specific meaning in the art and as discussed on pages 9-11 of the instant application. Such a material is not disclosed or suggested in the Holtzberg patent. Thus, even if the Hong publication and the Holtzberg patent were combined as suggested in the Office Action, the hypothetical device created by this hypothetical combination would not include all of the limitations of claim 6.

Under U.S. patent law, the mere fact that the prior art can be modified does *not* make the modification obvious, unless an *apparent reason* exists based on evidence in the record or scientific reasoning for one of ordinary skill in the art to make the modification. See, KSR Int'l Co. v. Teleflex Inc., 127 S.Ct. 1727, 1741 (2007). The KSR Court noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some "apparent reason to combine the known elements in the fashion claimed." Id. at 1741. In this case, the current record lacks any apparent reason, suggestion or expectation of success for combining the patents, and then further modifying the hypothetical device created by such a hypothetical combination to create Applicants' unique arrangements of claims 1-6.

Based on the above Amendments and comments, Applicants respectfully request withdrawal of this rejection of claim 6.

New Claims

Applicants have added new claims 7-12 by the current Amendment.

Claim 7 is an independent claim similar to amended independent claim 1, but requiring *only part of the valve retainer being composed of a shape varying member that varies in shape in response to a voltage application so as to change an opening/closing state of the reed valve*. Thus, new independent claim 7 is believed to be allowable for the reasons discussed above with respect to independent claim 1. Moreover, Applicants note that in the compressor of the Hong publication, at best, the entire valve retainer 130 is a shape varying member, not only part. Thus, the Hong publication does not disclose or suggest all of the limitations of new independent claim 1.

New claims 8-12 are dependent claims, which depend from new independent claim 7. Thus, new dependent claims 8-12 are believed to be allowable for the reasons discussed above with respect to new independent claim 7. The content of claims 8-12 corresponds to claims 2-6, respectively. Thus, new dependent claims 8-12 include additional limitations, which in combination with the limitations of new independent claim 7, are not disclosed or suggested by the Hong publication.

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Amendment dated October 26, 2009
Reply to Office Action of June 24, 2009

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In view of the foregoing amendment and comments, Applicants respectfully assert that claims 1-12 are now in condition for allowance. Reexamination and reconsideration of the pending claims are respectfully requested. If there are any questions regarding this Amendment, please feel free to contact the undersigned.

Respectfully submitted,

/Patrick A. Hilsmier/
Patrick A. Hilsmier
Reg. No. 46,034

GLOBAL IP COUNSELORS, LLP
1233 Twentieth Street, NW, Suite 700
Washington, DC 20036
(202)-293-0444
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